

Developing an Online Tool for the Ontario Secondary School Literacy Test

by

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PROJECT REVIEW INFORMATION

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The Project was approved on May 28, 2020 by the following review committee:

Review Committee:

Research Supervisor Dr. Ami Mamolo

Research Co-Supervisor Dr. Diana Petrarca

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The above review committee determined that the Project is acceptable in form and content and that a satisfactory knowledge of the field was covered by the work submitted. A copy of the Certificate of Approval is available from the School of Graduate and Postdoctoral Studies.

Abstract

In Ontario, a mandatory high-stakes standardized literacy test called the OSSLT is administered in the tenth grade. With notable failure rates and acknowledged test anxiety, students are in need of better test preparatory methods. I address this issue by developing an online tool that helps prepare students, particularly English language learners, for the test. The online tool I developed features learning principles and practices based on research in literacy testing and online education.

Keywords: literacy; online; education; English language learners (ELLs); Ontario Secondary School Literacy Test (OSSLT)

Author's Declaration

I hereby declare that this project consists of original work of which I have authored. This is a true copy of the work, including any required final revisions, as accepted by my committee.

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Maria Asuncion

Dedication

I dedicate this project to my parents for always believing in me; to my sister for showing interest in my work; and to my brother for cheering on me from afar.

I also dedicate this to my closest friends, whose encouragements are endearingly enthusiastic.

Lastly, I dedicate this to my partner and his family for their boundless kindness.

Acknowledgements

This project came to fruition from a call to help. I approached my amazing research supervisor, Dr. Ami Mamolo, after much rumination over what I would love to do as a project for my degree. I knew that it would be no small feat, but as usual, I was overly ambitious. With great enthusiasm, I shared my project idea to my family, my friends and my partner. All of whom I would like to thank.

After a few months working on this project, I soon found out I have borderline carpal tunnel, which took a toll on my physical and mental health, while I was balancing being overworked as a teacher and investing time in this project. With this in mind, I would like to extend my thanks to Dr. Ami Mamolo for considering my health by suggesting a video chapter and for seeing my vision so clearly when I had trouble seeing it myself. I would also like to express my gratitude towards my co-supervisor, Dr. Diana Petrarca, who took the time to refine this project, which means so much to me. Lastly, thank you to my second reader, Dr. Robert Power for teaching me how to create my online tool and for helping us edit my work.

In brief, I was inspired to complete this project to help others, but only managed to complete this project because people helped me.

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Chapter 1. Introduction

As an educator, many of my students struggled preparing for a large-scale mandatory literacy test. As a graduate student in Education and Technology, I read about similar struggles in research. These inspired me to create an online tool that would help secondary students prepare for this test. The online tool I created allows users to access lessons through the use of computers, tablets and smartphones, all of which people use every day.

An online tool opens up vast opportunities. Namely, educators and students would not have to worry about the restrictions of place and time. Instead of being physically present in class, they can access the learning material online anywhere, anytime as long as they have the right equipment. Students also have a more flexible schedule to complete a course online, giving them the freedom to study at their own pace. Other benefits for using an online tool will be described in later chapters and supported with evidence from current research.

1.1 Context to OSSLT

In Ontario, a mandatory high-stakes large-scale assessment called the Ontario Secondary School Literacy Test (OSSLT) is distributed to students in the tenth grade. The Ontario Ministry of Education has made the test compulsory to ensure students have reached the standard of English literacy skills before they graduate. The Ministry has acknowledged that there is substantial student anxiety towards the OSSLT (Education Quality and Accountability Office, n.d.; Government of Ontario, n.d.). Research suggests that students show symptoms of anxiety when sharing their thoughts about tests as high-stakes as the OSSLT (Cheng & Sun, 2015; Doe et al., 2011; Elder, 1996; Kearns, 2013; Li et al., 2015; Watson & Kehler, 2012; White, 2007). I have heard such anxious comments from many students myself, and as their teacher, I felt the

need to help them be more confident in demonstrating their skills in English literacy well enough to pass the test.

1.1.2 Personal Perspective

Before becoming an educator, I was a student enrolled in schools in Toronto, Ontario. As a young immigrant, I had to take the OSSLT, which was an obstacle made bigger because I was an English language learner (ELL). Now as an educator of both local and international students, I have observed that despite the local students having anxiety before taking the OSSLT, they still felt relatively more prepared for the test and much more relieved after completing it. On the other hand, the international students have told me that they were still anxious even after finishing the test.

As an ELL myself, I found that there are a few factors that cause this difference in anxiety levels. There is certainly a language barrier involved because the OSSLT evaluates a student's proficiency in English reading and writing skills. Another factor is the cultural difference. Local students have the exposure to gain culturally relevant knowledge. When the OSSLT refers to common cultural knowledge, international students would be at a disadvantage. Lastly, the international students I have taught shared that there are not many preparatory tools readily accessible to them. There are not many books translated into their respective native languages tailored for the OSSLT. There are also very few and ineffective websites or other technological tools that do the same, so I considered how I would be able to help these students. One of these missing resources needed to be developed. It could either be a book or an online tool. After taking courses that helped me learn about online tools and how to develop them, I decided to make an online tool to prepare students for the OSSLT by describing test expectations

and examples. Beyond the aforementioned reasons why online tools are beneficial for learning, more are elaborated upon in the next chapters.

1.2 Context to Online Tools

Throughout my years as a graduate student, I have had the opportunity to create online tools. I learned a few useful features in studying and creating them. First, it is easily accessible due to modern technology (Charbonneau, 2014; Harris, 2009; Holden & Rada, 2011; Jackson, 2019; Sapp, 2009; Selwyn, 2007; Subramony, 2007; Tarbutton, 2018). Technology-based educational tools especially help students who are developing ELL skills (Al Amrani, 2019; Cohen & Wang, 2019; Jiahong, 2016; Li, 2009; Li & Deng, 2018; Li, Snow, Jiang & Edwards, 2015; Li, Snow & White, 2015). As mentioned, graduate courses have taught me how to develop an educational online tool for students to prepare for the OSSLT, with the focus on ELLs, who are at a certain disadvantage due to the test's content (Banks, 2012; Chau et al., 2019; Cheng, Fox & Zheng, 2007; Doe et al., 2011; Ferne & Rupp, 2007; Fenwick, 2016; Li et al., 2015). These features and how I applied them are explored in the next section and chapter.

1.3 Purpose

1.3.1 Problem Statement

Secondary students have to pass the OSSLT in order to graduate. By the tenth grade, students must take the test. However, many of these students have shown anxiety in preparation for the test (Charbonneau, 2014; Harris, 2009; Holden & Rada, 2011; Jackson, 2019; Sapp, 2009; Selwyn, 2007; Subramony, 2007; Tarbutton, 2018). Students, especially ELLs, experience frustration (Han & Cheng, 2011; Klinger & Luce-Kapler, 2007) over a relatively high failure rate (Education Quality and Accountability Office, as cited by News Wire, 2017; Ontario Education

Research Exchange, n.d.). Certainly, these issues of student anxiety and failure rate need to be addressed. Notably, test bias and inadequate preparation also stand in the way of students' success in their OSSLT performance (Banks, 2012; Cheng, Klinger & Zheng, 2007; Elder, 1996; Fenwick, 2016; Kim & Jang, 2009; Watson, 2017; Watson & Kehler, 2012; White, 2007; Zheng et al., 2011). In this project, I explore how ELL students can be more prepared for the test. By creating and providing students with an online tool to help them understand the expectations of the OSSLT, I will hopefully better prepare them for it.

1.3.2 Research Objectives

This research project is a multimedia collection of how I developed an online tool to teach students about the OSSLT. The media used in this project are: my written work on current research and videos on how to navigate the online tool. The objectives of this project are to:

1. identify and articulate effective practices for developing online learning tools that support language development and test preparation;
2. develop a research-informed learning tool aimed at preparing learners for the OSSLT; and
3. critically analyse the learning potential of my online tool with respect to supporting students and integrating multimedia.

1.4 Outline of Chapters

In order to assess the need for an online tool to prepare students for a literacy test, I reviewed research relevant to student literacy learning as well as tests and other online tools that evaluate English literacy. For the rest of this project, the other chapters will explore:

- current literature on the problem areas of the OSSLT, including research on how online tools can enrich education;
- a video chapter describing the design of the online tool;
- an analysis of the online tool's design, including guidelines from graduate course instructors; and
- limitations and considerations for future directions of the online tool.

Chapter 2. Literature Review

My online tool focuses on ELLs preparing for the OSSLT. The tool clearly shows the test evaluators' expectations to help students prepare. It also includes examples of test content such as readings, writing tasks and answers. The literature I reviewed contains studies involving ELLs. This is due to a well-documented finding that ELLs are at a significant disadvantage, compared to native English speakers, when they take English language assessment tests, similar to the OSSLT (Banks, 2012; Chau et al., 2019; Cheng, Fox & Zheng, 2007; Doe et al., 2011; Ferne & Rupp, 2007; Fenwick, 2016; Li et al., 2015). Moreover, unsatisfactory student performance in the OSSLT reflects issues in the education system's inconsistent and unreliable evaluative tools. More specifically, the education system relies on standardized testing, which can be problematic as they contain biases from test designers. Namely, the unsatisfactory results of student performance in the OSSLT also heavily implies the need for better preparatory methods to address such biases in standardized testing (Cheng, Klinger & Zheng, 2007; Cheng et al., 2009; Harper et al., 2018; Kearns, 2011). In analyzing this literature, three common biases attributed to standardized literacy tests are: cultural, socioeconomic and gender.

2.1 Considerations for Test Designers

A common issue exposed in language assessments is how test creators assume that students are a homogenous group, who have all learned about the test's contents. More specifically, a few studies have shown that test creators do not pose questions that minority students would respond correctly to. This is mostly because of gender, socioeconomic and cultural differences.

2.1.1 Cultural Bias

Banks (2012) studied how cultural bias negatively influenced the results of students who were not only ELLs but also belonged to minority groups. Examining students from the minority groups Banks (2012) categorized as Hispanic, and compared them to White, research showed that culturally charged questions led to minority groups misunderstanding the expected answers. For instance, Banks explored how students from Hispanic cultures valued a more community-based lifestyle, whereas White students perceived personal desires to be more important. So when one question asked: “What is the overall theme expressed in the article?” Hispanic students answered: “Focusing on professional goals rather than family leads to disappointment”, whereas White students answered: “Happiness is found in being satisfied with personal achievements” (p. 227). Hispanic students valued family over personal career desires, but due to North American societal standards, this was interpreted as the wrong response. After examining the varying groups of students and their performances in the test, Banks (2012) suggested that test creators look into using test content that does not involve cultural bias.

Elder (1996) pioneered the idea of cultural differences in learning a foreign language. Elder used differential item functioning (DIF) to analyze if the test showed any disadvantages towards a group of students, who might not have learned how to effectively respond to a task. Consistent with other research (Banks, 2012; Kim & Jang, 2009), DIF showed that the students’ cultural background did matter, as it substantially influenced their responses to a test’s reading tasks. Elder (1996) compared Greek, Italian and Chinese students, and found that Chinese students struggled the most when taking English language assessments, as she hypothesized that

since there are many English words based on Greek and Italian languages, Chinese students struggled to find familiar words, which led to unsatisfactory test results.

Cheng, Klinger and Zheng (2007) proposed that test creators should consider that students come from differing language and educational backgrounds. They recommend that a test must use a format that reflects fairer evaluation, since otherwise, its validity can be questioned (Zheng et al., 2011). Their research also mentions DIF, which facilitates fairer assessments. I will discuss the use of DIF for test validity further after I review the next two biases: socioeconomic and gender.

2.1.2 Socioeconomic Bias

Fenwick (2016) revealed another bias when it comes to literacy and its evaluation. The socioeconomic background of students must also be considered in high-stakes large-scale assessments. Studying the OSSLT and a similar test in South Australia, Fenwick (2016) observed that students with lower socioeconomic status were at a disadvantage due to issues of access. An example of this could be a student with a lower socioeconomic status, who may not be able to afford to watch television and might miss much of the recent news. If the OSSLT asked about an event spread by the news in recent months, this student may not be able to respond properly, thus not reaching the test's standards.

Fenwick (2016) also suggested a solution to how socioeconomic status can be considered in test content. The creators of such tests must take into account a more local perspective, so that the content of the tests is more “useful, meaningful, and beneficial” (Fenwick, 2016, p. 245) to the diverse students who need to take the tests. To sum up, Fenwick (2016) presented that, in

addition to being aware of cultural bias, test creators should also consider using local information that would be more accessible to students.

2.1.3 Gender Bias

Gender is another bias in literacy tests. Due to common gender roles, male students felt that they were not encouraged to pursue activities outside of school that would have helped them perform better in language assessments (Watson, 2017; Watson & Kehler, 2012; White, 2007). In contrast, female students completed literacy activities, such as writing journals and reading magazines after school, which helped them perform better in literacy evaluation (Watson, 2017; Watson & Kehler, 2012; White, 2007).

2.2 Addressing Bias

Research suggests that educators can reduce the impact of bias by considering a few aspects of test design and preparation, including: differentiating test items for test validity; providing culturally sensitive learning material; and using online tools for test preparation.

2.2.1 Implementing Differential Item Functioning

Ferne and Rupp (2007) analyzed fifteen years' worth of research based on the validity of literacy tests. The researchers explored the valuable tool of DIF, which eliminates test biases. With such high stakes involved in a large-scale and lengthy test, the OSSLT should have fair and ethical content absent of any bias, whether culturally, socioeconomically or otherwise. Applying DIF when creating test content leads to fairer evaluation of student English literacy skills. Alternatively, if a test does contain biases, students can review the test's content to give them clearer expectations on how to achieve satisfactory results (Koo et al., 2014).

2.2.2 Preparing Students for the OSSLT

Cheng and Sun (2015) investigated the validity of the OSSLT, and in doing so, provided more insight as to how students can better prepare for the test. As mentioned earlier by several researchers, it is not only up to the students to prepare for the test, but other stakeholders, such as the test creators, must be aware of their involvement too. There are educators, teachers and/or tutors dedicated to guiding and supporting students as well. In addition, the parents and/or guardians also play an essential part, providing the means and support they can to help students prepare. Since the OSSLT contains content that is not guaranteed to be known by every single student taking it (Zheng et al., 2011), it is essential for stakeholders to give resources and opportunities for learners to study for the test.

Cheng, Fox and Zheng's (2007) study showed how the OSSLT had been a consistent struggle for ELLs. After the first year it was implemented, OSSLT still proved to be difficult for ELLs, but these learners showed relatively more success in the second year the test was distributed. Studies (Cheng, Klinger & Zheng, 2007; Zheng et al., 2011) theorize that the relative success came from students learning from examples of the first test. These studies suppose that after understanding the expectations of the OSSLT, students prepared themselves for the test more effectively. For example, students learned specific test expectations such as how the evaluators assess their writing skills. EQAO (n.d.) has since then provided marking schemes and examples of written work to help guide students, but these guides were not available in preparation for the first OSSLT administered. Such guides could not be made since EQAO uses content from previous tests to show examples.

Echoing the results of Chau et al. (2019) and Banks (2012), Cheng, Fox and Zheng (2007) also revealed that students' cultural backgrounds played an essential role in how they comprehended reading tasks. It is not only important to ensure that students are given access to information about the test, but it is also dire that test creators understand that students are not "culturally heterogeneous" (p. 88). This study further supports the need for more cultural awareness in test development and more effective test preparation.

Furthermore, Zheng et al. (2011) suggested that test creators should consider a test's "alignment" (p. 81). Students found it confusing that the OSSLT did not directly reflect what they learned in English classes (Zheng, 2011). From my experience as an educator, many students have confused the OSSLT as another English exam. Moreover, educators and other stakeholders, such as parents and administrators, have failed to inform students that the OSSLT evaluates student knowledge in English literacy and is not a direct evaluation of their English lessons at school. So the proposed need for more alignment between the OSSLT and classroom activities is another necessary criterion to meet (Levin, 2010). Certainly, as mentioned, providing students with clear expectations of the test's standards and content will equip them for the test.

2.2.3 Using Online Tools

Online learning has expanded in Canada (Online Learning Survey Canada, as cited in BC Campus News, 2019; Belsky, 2019; Canadian Digital Learning Research Association, 2018; Lederman, 2018). Online learning may also be called "e-learning, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-assisted learning, web-based learning, and distance learning" (Ally, 2008). There is some tangible evidence from our own observations alone that demonstrates that people prefer using technology, and during the

COVID-19 outbreak, social distancing led to schools across Canada relying on online and/or remote learning (Government of Ontario, n.d.; People for Education, n.d.). There are considerable benefits for language learners to use online educational tools (Al Amrani, 2019; Cohen & Wang, 2019; Jiahong, 2016; Li, 2009; Li & Deng, 2018; Li et al., 2014; Li et al., 2015). I will be reviewing literature on its use in more detail in this section.

Al Amrani (2019) tested students' ELL skills in an English for a Specific Purpose (ESP) course. Using an online tool, Al Amrani (2019) found that setting a specific goal for students made the learning experience more meaningful and motivational. Additionally, his research showed that content-based instruction (CBI) helped students with their ELL skills.

CBI is a teaching method used in language learning that does not delve into the grammar of the language. Instead, CBI focuses on how to succeed with specific goals in mind. In Al Amrani's (2019) online tool, based on the teaching methods of ESP and CBI, the students did in fact succeed in completing their specific purpose, which was to excel in an ELL test. Similarly, the online tool I developed for the OSSLT does not focus on English grammar. Instead, it focuses more on understanding the expectations of the OSSLT.

Cohen and Wang (2019) provided further insight on how online learning can help with ELLs' progress. Studying the progress of Chinese ELLs, they found that online learning allowed the participants to study at their own respective pace (Anderson, 2008). This made time for mental processing, encouraging students to translate and understand information in the time they needed. This also improved their English reading comprehension (Cohen & Wang, 2019). Without being pressed for time, students also developed critical thinking skills on their own.

Cohen and Wang's (2019) research also found that showing students sample readings online helped them increase their skills in reading comprehension as well.

Li et al. (2015) assembled a meta-analysis of research, proving that technology-based learning was helpful for secondary students, but specifically more helpful for ELLs, who showed a boost of confidence in their English language skills after studying with an online tool. Li et al. (2014) also discovered that ELLs were more interested in improving their English language skills from their frequent use of technology. Li et al. (2014) found that people preferred using technology for many activities, such as social networking, shopping and entertainment. This motivated non-native English speakers to learn English. From this review of current research, it is evident that online tools can catalyze student learning and prepare them for the OSSLT.

Chapter 3. Design of the Online Tool (Video Chapter)

Technology has proven to be a prominent tool in preparing students for tests similar to the OSSLT (Al Amrani, 2019; Cohen & Wang, 2019; Li et al., 2015; Li et al., 2014). As I shared in the introduction, based on my experiences, I noticed that providing students with online tools does benefit them.

In this chapter, I display and discuss the design of my online learning tool, OSSLT Prep through YouTube videos, which I arranged into a playlist (bit.ly/OSSLTMRP). In the videos, I briefly describe parts of my online tool and its overall set up and structure. The theories, principles and other reasons behind my design choices will be analyzed in the next chapter.

3.1 Videos and Descriptions of OSSLT Prep

Below is a list of the videos with descriptions of each:

- Video 1: Home Page and Navigation of OSSLT Prep (youtu.be/Ci_7NES8OxI)
 - describes the home page, which is the first page students see as soon as they enrol into the online course
 - shows how navigation works on Canvas, which is the platform of the course
- Video 2: Getting Started Unit and First Unit (youtu.be/HQRFw3QQnn8)
 - describes the Getting Started unit, which is a preview of expectations
 - describes Unit 1, which is an overview of the OSSLT and the rules during the administration of the test
- Video 3: Units 2 to 4, Practicing the Written Portions of the OSSLT (youtu.be/uGt-367SJDo)

- explores three similar units, which involve learning about and practicing skills in writing: an essay (Unit 2), a news report (Unit 3) and a short answer (Unit 4)
- scaffolds information by describing each unit's purpose; analyzing writing tasks; breaking down and explaining well-received answers; and reviewing the content learned after each unit, which are all effective preparatory methods (Cohen & Wang, 2019);
- Video 4: Cultural Knowledge and Review (<https://youtu.be/0cgA310wsVU>)
 - provides links to helpful external resources for: popular culture references; more OSSLT practice; and contact information of appropriate school staff and faculty.

The set up and design of my online tool was structured around the guidelines I received in a graduate course taught by Dr. Robert Power. Dr. Power emphasized the following key points which I applied in my design:

- include an introductory page about the instructor and the course objectives, which was proven to positively correlate with student motivation and learning (Al Armani, 2019);
- scaffold the lessons in the online course by units; and
- follow web accessibility compliance, such as providing closed-captions for videos (The Association of Registered Graphic Designers, 2015).

In the next chapter, I draw on my experiences from another graduate course to discuss key principles of learning in an online environment and how they are applied in OSSLT Prep.

Chapter 4. Analysis of the Design

In this chapter, I focus the analysis of my online course and the decisions on my design based on key ideas learned from a graduate course taught by Dr. Robin Kay. Dr. Kay emphasized various learning principles of online-based education; namely, the following principles:

- multimedia, which is the use of different types of media (Mutlu & Altun, 2014; Schuler et al., 2011; Schweppe & Rummer, 2014);
- contiguity, which is the concise placement of image close to text (Ginns, 2006; Holsanova et al., 2009; Mammarella et al., 2013; Mayer, 2017; Paek et al., 2017; Schroeder & Cenkci, 2020); and
- personalization, which is communication directed towards the learner (Kartal, 2010; Mayer, 2017; Reichel et al., 2014; Schrader et al., 2018).

In this chapter, I show examples of how I designed OSSLT Prep with these guidelines in mind.

4.1 Multimedia Learning

Multimedia is an important method to include in any instructive platform, especially in online tools where various forms of media can be easily included (Mutlu & Altun, 2014; Schuler et al., 2011; Schweppe & Rummer, 2014). On the Internet, web designers can depict many media on a webpage, such as audio, video, images and text. For OSSLT Prep, providing audio recordings allows for more accessibility, as Web Content Accessibility Guidelines (WCAG) 2.0 recommend (The Association of Registered Graphic Designers, 2015). The Government of Ontario (n.d.) also reinforces WCAG 2.0 for private/non-profit organizations with more than fifty employees and public sector organizations. As a more specific example, in OSSLT Prep, I

gave students the option to listen to audio recordings of me reading text-heavy web pages, which can be helpful in their online learning (Al-Shehri & Gitsaki, 2010; Mayer, 2017).

4.1.1 Community Presence

Furthermore, I included the use of an external online tool called Flipgrid (Microsoft, 2014) in OSSLT Prep. Flipgrid allows students to take short video clips of themselves sharing information. Students are assigned to use Flipgrid as a creative way to express themselves. The use of Flipgrid can also encourage student participation. Students are expected to use Flipgrid for two purposes: first, to introduce themselves at the start of the course, and then later, to share their thoughts on their learning experience after completing the course.

The addition of Flipgrid also allows students to build a sense of community. Flipgrid lets students share their videos to evaluators and to other students, which builds community presence. Students will most likely go through the online course independently, so in order to alleviate possible feelings of isolation, it is important to build community presence (Andersson & Nakahashi, 2019; Berry, 2019; Conrad, 2002). Below is an image of how I integrated Flipgrid into OSSLT Prep.

Figure 1

An Example of Multimedia in OSSLT Prep

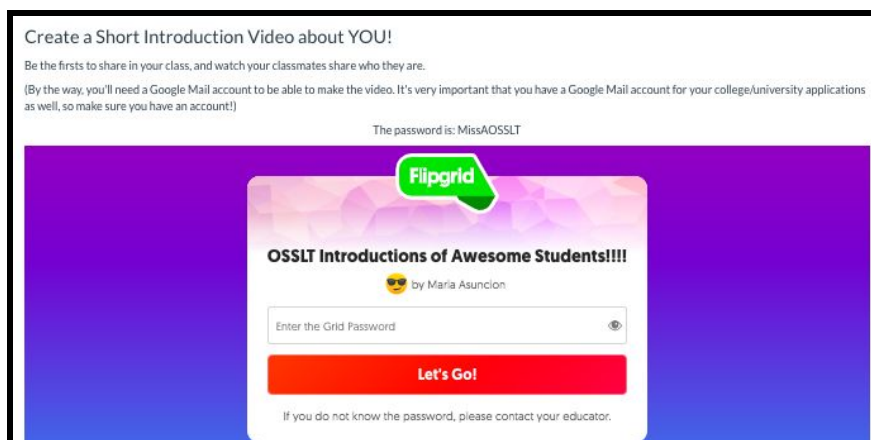


Figure 1 shows a portion of the Getting Started Unit, which focuses on the students. In order to build a sense of community, I use Flipgrid, depicted at the bottom of Figure 1. As mentioned, Flipgrid is an external online tool that allows students to create short videos of themselves.

Building community presence is extremely important in online learning since it significantly reduces the chances of student isolation (Andersson & Nakahashi, 2019; Berry, 2019; Conrad, 2002). Isolation is an issue in online learning since students often miss the physical presence of being in a classroom. However, as discussed in previous chapters, online learning can provide a more ideal experience for students. There is more flexibility in terms of when and where learning can take place (Anderson, 2008; Cohen & Wang, 2019) and in addition to that, when multimedia is used, it can enhance student learning experience (Al-Shehri & Gitsaki, 2010; Andersson & Nakahashi, 2019; Berry, 2019; Conrad, 2002).

4.1.2 Memory Benefits

Furthermore, when students learn from multimedia platforms, they have better memory retention and recall (Harp & Mayer, as cited by Doolittle & Alstaedter, 2009; Lusk et al., 2009). In other words, with the use of multimedia learning, students remember information better in their short-term and long-term memory. Improved memory can certainly help students recall the expectations and contents of the literacy test more effectively.

4.1.3 Teacher Presence

Another example of how I integrated multimedia in OSSLT Prep is my use of YouTube videos on the home/front page. The first video is to show how navigation works on Canvas, and the second video is to show students who their instructor is. The use of videos is a way to

establish teacher presence in an online environment (Bialowas & Steimel, 2019). Garrison et al. (1999) introduced this term and found that teacher presence increases student activity in face-to-face learning environments. Bialowas & Steimel (2019) extended this notion to online settings. A cropped screenshot of the home/front page is shown below.

Figure 2

A Second Example of Multimedia in OSSLT Prep

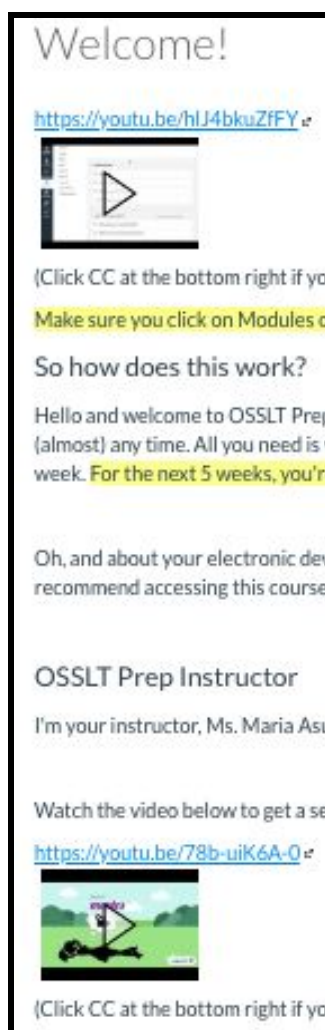


Figure 2 shows the first page of OSSLT Prep, which establishes teacher presence in the first video, shown at the top of the image. The teacher's presence is established with this video of

me showing students how to navigate through the online tool. When students feel the presence of their instructor online, their learning experience goes much more smoothly (Brom et al., 2017; Kartal, 2010; Schrader et al., 2018). In fact, the teacher's presence encourages another learning principle called personalization, which will be analyzed later in this chapter.

On the bottom of Figure 2, a second video is shown. This video further builds teacher presence by more directly introducing me as the instructor. In this video, I present myself as their teacher and divulge in my interests such as relatable hobbies. Collectively, teacher presence and personalization add to the effectiveness of multimedia learning (Brom et al., 2017; Kartal, 2010; Schrader et al., 2018), especially with ELLs in mind (Wang & Crooks, 2015).

4.2 Contiguity Principle

As shown, multimedia learning incorporates other learning principles such as community and teacher presence. Along with these principles, the contiguity principle also supports students' online learning experiences. Also called spatial split-attention, contiguity is the placement of images close to written text, which enhances student learning (Ginns, 2006; Mammarella et al., 2013; Paek et al., 2017; Schroeder & Cenkci, 2020). The close proximity of images to text on a webpage helps students gain "better learning results" (Tabbers et al., 2004, p. 71) and can lessen their chances of experiencing cognitive overload (Tabbers et al., 2004), which is when students put in too much mental effort and can no longer study well (Chen et al., 2012; Rutkowski & Saunders, 2010; Yun et al., 2010). A screenshot example is shown below.

Figure 3

An Example of Contiguity in OSSLT Prep

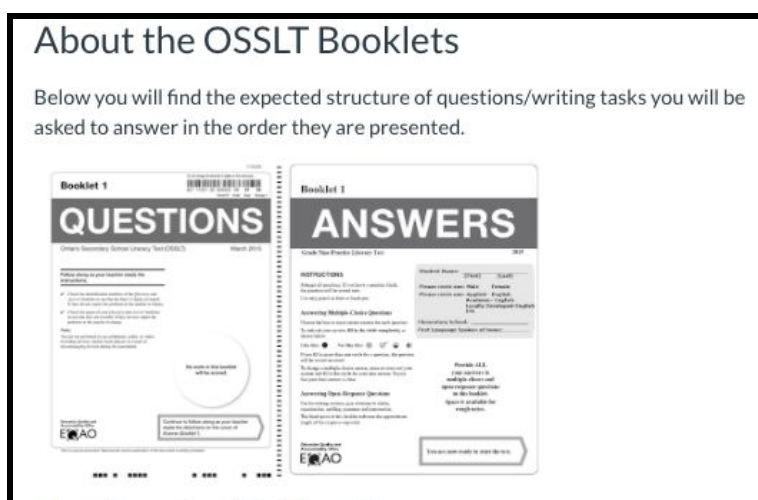


Figure 3 shows embedded images of the booklets students receive during the test. By providing visual cues, students learn better since contiguity and multimedia help improve memory recall (Harp & Mayer, as cited by Doolittle & Alstaedter, 2009; Lusk et al., 2009) and decrease the chances of students experiencing cognitive overload (Chen et al., 2012; Rutkowski & Saunders, 2010; Tabbers et al., 2004; Yun et al., 2010).

4.3 Personalization Principle

As mentioned earlier, another principle called personalization positively affects online learning. The personalization principle involves the use of welcoming language, including such words as “you” and “we”, which influence the learning experiences significantly (Kartal, 2010; Mayer, 2017; Reichel et al., 2014; Schrader et al., 2018). Studies found that personalizing the language of online instruction decreases the probability of students feeling isolated and detached from the learning material. Similar to a teacher’s presence online, personalization helps students feel as though the material is custom-made for them, further improving their online learning

(Kartal, 2010; Mayer, 2017; Reichel et al., 2014; Schrader et al., 2018). Figure 4 shows an image of Unit 5, which applies the personalization principle by referring to the students as “you” often.

Figure 4

An Example of Personalization in OSSLT Prep

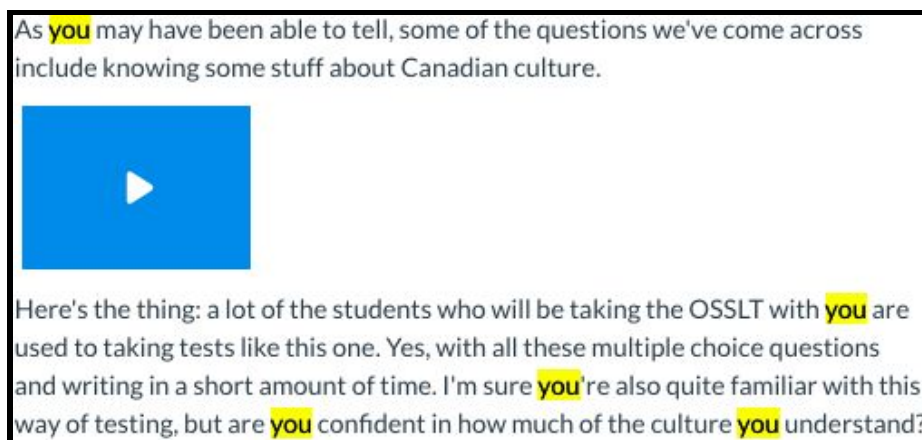


Figure 4 shows the repetitive use of “you” and my purposeful choice of words. I set a positive and friendly tone that encourages students in their learning (Lane, 2017; Nucaro, 2017; Responsive Classroom, 2012), which is more helpful for ELLs who are perhaps learning new or reviewing their English vocabulary (American English, n.d.; Dornyei & Skehan, as cited by Waring, H.Z., 2008; Khodarahmi & Zarrinabadi, 2016; PennState College of Education, n.d.; Tsiplakides & Keramida, 2010). Also, using welcoming language positively correlates with student learning (Kartal, 2010; Reichel et al., 2014; Schrader et al., 2018), so I made sure to consistently use encouraging words throughout OSSLT Prep.

Dr. Kay and Dr. Power’s courses taught me how to elevate learning in my online tool. OSSLT Prep applies the principles of multimedia, contiguity and personalization. With the graduate courses in mind, I made OSSLT Prep with much consideration for ideal online education.

Chapter 5. Discussion and Future Directions

In this chapter, I examine how OSSLT Prep can be further improved. I also make connections to the previous chapters to discuss the limitations of OSSLT Prep. The limitations show the basis of possible future modification, which I highlight in my considerations. In doing so, I hope to continue enhancing OSSLT Prep so that students can benefit from it.

5.1 Limitations of OSSLT Prep

The following limitations that will be discussed include: the length of OSSLT Prep, as well as its lacking offline capabilities; English language practice; and mental health support. Afterwards, I will be basing considerations for future revisions on these limitations.

5.1.1 Course Length

From my review of my online tool, I estimate that an average student may take 7.5 hours to complete OSSLT Prep. In comparison, OCL4O, the course that students have to take once they have failed OSSLT twice, is typically 110 hours (Bright Minds Online School, n.d.; Keewatinoook Internet High School, n.d.; Ontario Virtual School, n.d.; Toronto eSchool, n.d.; Virtual High School, n.d.). The length of both courses varies greatly. Though, I would like to note that OSSLT Prep is meant to be a short supplementary course, whereas OCL4O is mandatory for students who have failed OSSLT twice in order for them to graduate. OSSLT Prep is completed at a shorter amount of time since its purpose is to help ELLs know test expectations, while OCL4O teaches students how to successfully complete various writing tasks that align with Ontario curriculum standards (Bright Minds Online School, n.d.; Education Quality and Accountability Office, n.d.; Keewatinoook Internet High School, n.d.; Ontario Virtual School, n.d.; Toronto eSchool, n.d.; Virtual High School, n.d.).

5.1.2 Blended Learning

Using an online platform to teach students about literacy has shown to be effective in both learning a new language and preparing for evaluation (Al Amrani, 2019; Cohen & Wang, 2019; Jiahong, 2016; Li, 2009; Li & Deng, 2018; Li et al., 2014; Li et al., 2015). Specifically for my project, I created the course through Canvas, which allows administrators, instructors and students to access OSSLT Prep online. However, this comes with certain limitations. First, although the content is online, it cannot be downloaded and saved for offline use. In other words, anyone who would like to access OSSLT Prep must have functional Wi-Fi connected to their device. It might be more accessible for users, especially students, to have the option to download at least the course's reading material, so that they can study it offline. However, assessments must be completed online in order to receive specific instructor feedback and timely evaluation. If for any reason a student cannot complete assessments online, submitting assessments in person is possible and may be arranged with the educators and/or administrators.

Furthermore, face-to-face interactions between the evaluators and the students are likely to happen. These interactions can even be necessary for a few reasons. First, students may already be physically present at school, so they may interact with their educators and possibly their evaluators. From my experience, students have often asked me face-to-face about the OSSLT and how to study for it. My colleagues have had similar experiences as well. Second, students with inquiries about the online course may also ask the administrators and/or educators for assistance in person. In short, since face-to-face interactions may occur, the learning method of OSSLT Prep is not fully online, but can be seen as a blended learning experience, which is both online and face-to-face instruction (Helms, 2012; Neumeier, 2005).

5.1.3 Teaching English

I claimed earlier that OSSLT Prep caters to ELLs. However, OSSLT Prep does not focus on teaching English to students. Its main purpose is to prepare students for the literacy test, so I gauge that students should have English language skills at a lower-intermediate level in order to comprehend the online course's material. If a student does not have English language skills at this level, educators and administrators may recommend the student to review his/her skills by providing practice worksheets, books and/or after-school tutoring.

Additionally, as mentioned in earlier chapters, the literacy test is biased against ELLs (Banks, 2012; Elder, 1996; Kim & Jang, 2009; Chau et al., 2019; Cheng, Fox, Zheng, 2007; Cheng, Klinger, Zheng, 2007; Zheng et al., 2011). Students with lower English language skills may experience a challenging time trying to complete OSSLT Prep.

Nevertheless, I use more familiar language in the online course, and as mentioned in the Analysis, the personalization principle paves the way for a smoother learning experience (Kartal, 2010; Lane, 2017; Nucaro, 2017; Reichel et al., 2014; Responsive Classroom, 2012; Schrader et al., 2018), especially for ELLs (American English, n.d.; Dornyei & Skehan, as cited by Waring, H.Z., 2008; Khodarahmi & Zarrinabadi, 2016; PennState College of Education, n.d.; Tsiplakides & Keramida, 2010).

5.1.4 Student Mental Health

When I created the earliest version of OSSLT Prep, I included a section in the last unit that focused on students' mental health. It was a reminder for them that anxiety and other negative mental health moments naturally occur in anticipation for the literacy test. I also added links to external resources which they could reach via text, phone call or online chat, if they

required professional support. The reasons I added this section were from my own interest in mental health, as well as the large number of students who shared with me their distress over the test. However, I decided to remove the mental health section since it strayed from the main goal, which is to prepare them for test content. In lieu of a mental health section, I build a sense of community in OSSLT Prep by encouraging group discussions and by letting students share short clips of themselves via Flipgrid, as shown in the Analysis chapter.

5.2 Considerations for Future Modification

In my ambition to develop OSSLT Prep as an effective online tool, I consider other resourceful aspects that can be included. Due to time restraints and priorities, I could not add the following modification: gaming elements; digital badges; translatable content; more web accessibility; or formal research to test OSSLT Prep's efficacy. Regardless, it is always possible to perform these modifications in the future.

5.2.1 Gamification

Many popular educational games inspired me to consider adding gamification into OSSLT Prep, including Duolingo, a gamified foreign language learning app; Prodigy, a quest-based mathematical app; and Khan Academy, an online educational resource for many subjects. There are many more that are accessible through the Internet with a simple Google search. Despite the popularity of these games, I could not invest my time adding gamification into OSSLT Prep. In the future, however, it might be worth designing supplemental games that can help students display their knowledge and skills in literacy. An example of this can be creating multiple-choice quizzes that are in the form of a game, and every time a student answers correctly, a video game character gets closer to reaching a more tangible goal, which could be

displayed as the top of a mountain or a finish line. Essentially, gamification can be effective in online learning, particularly for student motivation (Bal, 2019; Nistor & Iacob, 2018; Rabah et al., 2018; Sahin et al., 2017; van Roy & Zaman, 2018).

5.2.2 Badge Rewards

Similar to gamification, a digital badge system involves giving students a tangible virtual reward for their accomplishment. For example, students who achieve their participation in their group's discussion board would receive a digital badge that they can proudly display under their username or in their student profile. This badge reward system has positively correlated with motivation (Facey-Shaw et al., 2018; Dyjur & Lindstrom, 2017; Reid et al., 2015; Shields & Chugh, 2017) as well as student learning (Ahn et al., 2014). Though, it should be noted that badge rewards are not sufficient replacement for specific evaluative feedback (Randall et al., 2013). Particularly for OSSLT Prep, badges can be used for student participatory evaluation, such as sharing video clips of themselves at the start and the end of the course. However, badges would not be efficient in assessing students' written work. It would be more appropriate for students to receive clearer evaluation from the course instructor(s), who can provide more descriptive feedback.

5.2.3 Translatable Content

A possible solution for ELLs who struggle with reading English is to have the option to translate the words on the page with tools such as Google Translate. This would allow students and perhaps their parents/guardians to be able to read the lesson material in their native language, which may help them when they feel discouraged and/or overwhelmed (Ramachandran & Rahim, 2004; Yao, 2017). Tools such as Google Translate could also provide clearer instructions

on how to navigate through an online tool such as OSSLT Prep (Williams, 2006). This could also lead to other positive outcomes, which Lake and Beisly (2019) claimed: encourages multilingualism, builds teacher and community presence, and fosters self-confidence.

5.2.4 Accessible for All

As mentioned in the Design (Video Chapter), I followed Dr. Power's instructions and WCAG 2.0's recommendations to make the online course more accessible to users. For instance, I wrote the subtitles for OSSLT Prep's YouTube videos to make sure that there were no captioning errors. This ensures that students with hearing impairments or students without sound equipment can still reliably access the same information as they would through audio. Furthermore, web accessibility such as video captions positively affects English language learning experience since ELLs can both listen to the video and read the captions along with what they hear (Aksu-Atac & Guny-Koprulu, 2018; Kruger & Steyn, 2014; Topkaraoglu & Nisanci, 2018).

I also created audio clips of me reading word-heavy webpages, but it may be more helpful to have video clips showing me reading out the webpages and more interactively demonstrating parts of OSSLT Prep. For example, in the online course, when studying a successful news report, I would analyze the parts in the video and portray myself as if I was directly speaking to the student. This may strengthen teacher and community presence as well as web accessibility.

Lastly, I consider creating more web accessible content to benefit both ELLs and other learners who might need accommodations. In the future, OSSLT Prep can reach more students,

especially ones with impairments, by providing more accessibility (Blanck, 2015; Greeson et al., 2020; Kimmons, 2017; Shawar, 2015).

5.2.5 Formal Research

Finally, it is dire to test the effectiveness of OSSLT Prep. Students would start the course several weeks before the test to determine the online tool's efficacy in and correlation with student preparation, self-perceived confidence and test results. It would be favourable to give students at least five weeks to complete the course and give a week or two before test day as a buffer for students to hone their skills for the test.

To determine the course's effectiveness, the experiment would need a number of students to be in the control group and a similar number of students in the experimental group. The control group will not take the course, but the experimental group will complete the course. Both groups will be as similar as possible in both gender and age. At the start of the experiment, students will take a survey on their self-confidence levels with an optimally 7-point Likert scale (Beal & Dawson, 2007; Xu & Leung, 2018). Before the experimental group completes the course, both groups will take a mock OSSLT. The results of which will be compared with their actual OSSLT results.

Before taking the test, ideally the day prior, students are to take another confidence survey. Typically a few months after the test administration, the test results will be given, from which the experiment can derive a comparison of both groups' mock test and actual test scores to determine if there is a statistically significant difference between them. Moreover, students will be interviewed on OSSLT Prep's most helpful factors. This may indicate whether or not online tools such as OSSLT Prep can prepare students to perform well in tests such as the OSSLT.

As an educator, I've seen my students struggle to find ways to prepare for the OSSLT. As a graduate student, I've seen similar findings in my research. Every year, the OSSLT is administered and from my experience, students frantically ask questions about the test. Some students may even experience anxiety (Charbonneau, 2014; Cheng & Sun, 2015; Doe et al., 2011; Education Quality and Accountability Office, n.d.; Elder, 1996; Government of Ontario, n.d.; Harris, 2009; Holden & Rada, 2011; Jackson, 2019; Kearns, 2013; Li et al., 2015; Sapp, 2009; Selwyn, 2007; Subramony, 2007; Tarbutton, 2018; Watson & Kehler, 2012; White, 2007). Considering these, I developed OSSLT Prep to equip students with necessary information about the test. The online tool describes evaluators' expectations, examples of well-written assessments and other resources that can help students prepare. All of which the learners can easily access from an electronic device and learn at their own pace, so that they can have the learning experience ideal for their needs.

References

- Ahn, J., Pellicone, A., & Butler, B. S. (2014). Open badges for education: What are the implications at the intersection of open systems and badging? *Research in Learning Technology*, 22. <https://doi.org/10.3402/rlt.v22.23563>
- Aksu-Atac, B., & Gunay-Koprulu, S. (2018). The role of subtitles in foreign language teaching. *International Online Journal of Education & Teaching*, 5(3), 525–533.
<http://iojet.org/index.php/IOJET/article/view/350/251>
- Al Amrani, M. (2019). Assessing the impact of content-based instruction on learning EFL in an ESP Class. *Journal of Languages for Specific Purposes*, 15–30.
<https://search-ebscohost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=135363531&scope=site>
- Ally, M. (2008). Foundations of educational theory for online learning. In T. Anderson (ed.), *The theory and practice of online learning*.
https://www.aupress.ca/app/uploads/120146_99Z_Anderson_2008-Theory_and_Practice_of_Online_Learning.pdf
- Anderson, T. (2008). Theory and practice of online learning. In T. Anderson (ed.), *The theory and practice of online learning*.
https://www.aupress.ca/app/uploads/120146_99Z_Anderson_2008-Theory_and_Practice_of_Online_Learning.pdf
- Al-Shehri, S. & Gitsaki, C. (2010). Online reading: A preliminary study of the impact of integrated and split-attention formats on L2 students' cognitive load. *ReCALL*, 22(3), 356–375. <https://doi-org.uproxy.library.dc-uoit.ca/10.1017/S0958344010000212>

American English. (n.d.). *Positive language in the EFL classroom*. United States Department of State.

https://americanenglish.state.gov/files/ae/resource_files/topic_4_-_positive_language_final.pdf

Andersson, S., & Nakahashi, M. (2019). Establishing online synchronous support for self-access language learning. *Studies in Self-Access Learning Journal*, 10(4), 323–338.

<http://uproxy.library.dc-uoit.ca/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=141267640&scope=site>

Bal, M. (2019). Use of digital games in writing education: An action research on gamification. *Contemporary Educational Technology*, 10(3), 246–271.

<https://doi-org.uproxy.library.dc-uoit.ca/10.30935/cet.590005>

Banks, K. (2012). Are inferential reading items more susceptible to cultural bias than literal reading items? *Applied Measurement in Education*, 25(3), 220–245.

<https://doi.org/10.1080/08957347.2012.687610>

Bayraktar, D. M., & Altun, A. (2014). The effect of multimedia design types on learners' recall performances with varying short term memory spans. *Multimedia Tools and Applications*, 71(3), 1201–1213. <https://doi.org/10.1007/s11042-012-1257-z>

BC Campus News. (2019, January 25). Online learning welcomes increased numbers of Canadian students.

<https://bccampus.ca/2019/01/25/online-learning-welcomes-increased-numbers-of-canadian-students/>

- Beal, D. J., & Dawson, J. F. (2007). On the use of Likert-type scales in multilevel data. *Organizational Research Methods*, 10(4), 657–672.
<https://doi.org/10.1177/1094428106295492>
- Belsky, L. (2019, October 4). *Where online learning goes next*. Harvard Business Review.
<https://hbr.org/2019/10/where-online-learning-goes-next>
- Berry, S. (2019). Faculty perspectives on online learning: The instructor's role in creating community. *Online Learning*, 23(4), 181–191.
<https://doi-org.uproxy.library.dc-uoit.ca/10.24059/olj.v23i4.2038>
- Bialowas, A., & Steimel, S. (2019). Less is more: Use of video to address the problem of teacher immediacy and presence in online courses. *International Journal of Teaching & Learning in Higher Education*, 3(2), 354–364.
<http://uproxy.library.dc-uoit.ca/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=138163902&scope=site>
- Blanck, P. (2015). eQuality: Web accessibility by people with cognitive disabilities. *Inclusion*, 3(2), 75–91. <https://doi-org.uproxy.library.dc-uoit.ca/10.1352/2326-6988-3.2.75>
- Brom, C., Hannemann, T., Stárková, T., Bromová, E., & Děchtěrenko, F. (2017). The role of cultural background in the personalization principle: Five experiments with Czech learners. *Computers & Education*, 112, 37–68.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1016/j.compedu.2017.01.001>
- Bright Minds Online School. (n.d.). Ontario Secondary School Literacy Course - OLC4O Online. <https://brightmindsonlineschool.ca/w-courses/grade12/olc4o/>

- Canadian Digital Learning Research Association. (2018, November). *The rise of online learning in Canadian Universities and Colleges*. eCampus Ontario.
<https://www.ecampusontario.ca/wp-content/uploads/2018/12/Infographic-TESS-ENG-WEB.pdf>
- Charbonneau-Gowdy, P. (2014). Telling tales: Responding to challenges in literacy competencies using e-reader-based programs. *Proceedings of the International Conference on E-Learning*, 31–38.
<https://search-ebscohost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=97056254&scope=site>
- Chau, J., Wu, W., Chen, J., & Lughmani, S. (2011). ESL readers comprehension performance: the Chinese secondary context. *ELT Journal*, 66(3), 304–317.
<https://doi.org/10.1093/elt/ccr088>
- Chen, C. Y., Pedersen, S., & Murphy, K. L. (2012). The influence of perceived information overload on student participation and knowledge construction in computer-mediated communication. *Instructional Science*, 40(2), 325–349.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1007/s11251-011-9179-0>
- Cheng, L., Fox, J., & Zheng, Y. (2007). Student accounts of the Ontario Secondary School Literacy Test: A case for validation. *Canadian Modern Language Review*, 64(1), 69–98.
<https://doi.org/10.3138/cmlr.64.1.069>
- Cheng, L., Klinger, D. A., & Zheng, Y. (2007). The challenges of the Ontario Secondary School Literacy Test for second language students. *Language Testing*, 24(2), 185–208.
<https://doi.org/10.1177/0265532207076363>

- Cheng, L., Klinger, D. A., & Zheng, Y. (2009). Examining students' after-school literacy activities and their literacy performance on the Ontario Secondary School Literacy Test. *Canadian Journal of Education*, 32(1), 118–148.
<https://search-ebscohost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=508031118&scope=site>
- Cheng, L., & Sun, Y. (2015). Interpreting the impact of the Ontario Secondary School Literacy Test on second language students within an argument-based validation framework. *Language Assessment Quarterly*, 12(1), 50–66.
<https://doi.org/10.1080/15434303.2014.981334>
- Choong, T. (2019, September 5). *OCL4O course outline*. Keewatinook Internet High School.
<http://education.knet.ca/public/docs/OLC4O%20Course%20Outline.pdf>
- Cohen, A. D. & Wang, K. H. (2019). Fine-tuning word meanings through mobile app and online resources: A case study of strategy use by a hyperpolyglot. *System*, 85, 1–16.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1016/j.system.2019.102106>
- Conrad, D. L. (2002). Deep in the hearts of learners: Insights into the nature of online community. *Journal of Distance Education*, 17(1), 1–19.
<http://uproxy.library.dc-uoit.ca/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=507759458&scope=site>
- Davis, G. M., & Watson, E. (2016). Creating an online information literacy course for concurrent enrollment students: A collaboration with a state-sponsored online school. *College & Undergraduate Libraries*, 24(1), 29–50. <https://doi.org/10.1080/10691316.2016.1190676>

Doe, C., Cheng, L., Fox, J. Klinger, D. A., & Zheng, Y. (2011). Test-takers' background, literacy activities, and views of the Ontario Secondary School Literacy Test. *Alberta Journal of Educational Research*, 57(2), 115–136.

<https://search-ebscohost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=67256893&scope=site>

Doolittle, P. E., & Altstaedter, L. L. (2009). The effect of working memory capacity on multimedia learning: Does attentional control result in improved performance? *Journal of Research in Innovative Teaching*, 2(1), 7–25.

<https://search-ebscohost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=45438036&scope=site>

Durant, H. & Mason, A. (2012). The loneliness of the long-distance learner: Social networking and student support. A case study of the distance-learning MA in translation at Bristol University. *Open Learning*, 27(1), 81–87.

<https://doi-org.uproxy.library.dc-uoit.ca/10.1080/02680513.2012.640790>

Dyjur, P., & Lindstrom, G. (2017). Perceptions and uses of digital badges for professional learning development in higher education. *TechTrends*, 61(4), 386–392.

<https://doi.org/10.1007/s11528-017-0168-2>

Education Quality and Accountability Office. (2018, December 21). 81% of Ontario's Grade 10 students succeed on provincial literacy test.

<https://www.newswire.ca/news-releases/81-of-ontarios-grade-10-students-succeed-on-provincial-literacy-test-641511493.html>

Education Quality and Accountability Office. (n.d.). Examples of the Assessments: Ontario Secondary School Literacy Test, 2019.

<https://www.eqao.com/en/assessments/OSSLT/Pages/example-assessment-materials-current-year.aspx>

Education Quality and Accountability Office. (n.d.) Parents.

<https://www.eqao.com/en/assessments/grade-9-math/parents#2before>

Education Quality and Accountability Office. (n.d.). Planning and preparation guide: Ontario Secondary School Literacy Test.

<https://www.eqao.com/en/assessments/OSSLT/assessment-docs/planning-preparation-guide-osslt.pdf>

Elder, C. (1996). The effect of language background on “foreign” language test performance:

The case of Chinese, Italian, and Modern Greek. *Language Learning*, 46(2), 233–282.

<https://doi.org/10.1111/j.1467-1770.1996.tb01236.x>

Facey-Shaw, L., Specht, M., & Bartley-Bryan, J. (2018). Digital badges for motivating

introductory programmers: Qualitative findings from focus groups. *IEEE Frontiers in Education Conference (FIE)*, 1–7. <https://doi.org/10.1109/fie.2018.8659227>

Fenwick, L. (2017). The effects of discourses in regional contexts on the development of

curriculum-based literacy standards for adolescents in schooling: a comparative study of South Australia and Ontario. *The Curriculum Journal*, 28(2), 231–248.

<https://doi.org/10.1080/09585176.2016.1271344>

- Ferne, T., & Rupp, A. A. (2007). A synthesis of 15 years of research on DIF in language testing: Methodological advances, challenges, and recommendations. *Language Assessment Quarterly*, 4(2), 113–148. <https://doi.org/10.1080/15434300701375923>
- Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2), 87-105.
http://resolver.scholarsportal.info.uproxy.library.dc-uoit.ca/resolve/10967516/v02i0002/87_ciiateccihe.xml
- Ginns, P. (2006). Integrating information: A meta-analysis of the spatial contiguity and temporal contiguity effects. *Learning & Instruction*, 16(6), 511–525.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1016/j.learninstruc.2006.10.001>
- Government of Ontario (n.d.) COVID-19: Support for students and parents.
<https://www.ontario.ca/page/covid-19-support-students-and-parents>
- Government of Ontario. (n.d.). *Preparing students for the OSSLT*. Ontario Ministry of Education. <http://www.edu.gov.on.ca/eng/document/brochure/osslt/#10>
- Government of Ontario (n.d.) How to make websites accessible.
<https://www.ontario.ca/page/how-make-websites-accessible#section-1>
- Greeson, J. K. P., Treglia, D., Morones, S., Hopkins, M., & Mikell, D. (2020). Youth matters: Philly (YMP): Development, usability, usefulness, & accessibility of a mobile web-based app for homeless and unstably housed youth. *Children & Youth Services Review*, 108, 1–8. <https://doi-org.uproxy.library.dc-uoit.ca/10.1016/j.childyouth.2019.104586>

- Han, H., & Cheng, L. (2011). Tracking the success of English language learners within the context of the Ontario Secondary School Literacy Test. *Canadian and International Education*, 40(1), 76–96.
http://ir.lib.uwo.ca/cie-eci/vol40/iss1/6?utm_source=ir.lib.uwo.ca%2Fcie-eci%2Fvol40%2Fiss1%2F6&utm_medium=PDF&utm_campaign=PDFCoverPages
- Harris, P. (2009). A new era for accessibility. *T+D*, 63(4), 58–61.
<https://search-ebshost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=37375459&scope=site>
- Hasham, A. (2019). *OLC4O course outline*. Toronto eSchool.
<http://torontoeschool.com/courseoutlines/OLC4O.pdf>
- Helms, S. A. (2012). Blended/hybrid courses: A review of the literature and recommendations for instructional designers and educators. *Interactive Learning Environments*, 22(6), 804–810. <https://doi.org/10.1080/10494820.2012.745420>
- Holden, H. & Rada, R. (2011). Understanding the influence of perceived usability and technology self-efficacy on teachers' technology acceptance. *Journal of Research on Technology in Education*, 43(4), 343–367.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1080/15391523.2011.10782576>
- Holsanova, J., Holmberg, N., & Holmqvist, K. (2009). Reading information graphics: The role of spatial contiguity and dual attentional guidance. *Applied Cognitive Psychology*, 23(9), 1215–1226. <https://doi.org/10.1002/acp.1525>

- Jackson, L. (2019). Mediating class: The role of education and competing technologies in social mobilization. *Studies in Philosophy & Education*, 38(6), 619–628.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1007/s11217-019-09656-1>
- Jiahong, J. (2016). An investigation into Chinese college English teachers' beliefs of students' web-based informal language learning. *International Journal of Information & Communication Technology Education*, 12(3), 26–37.
<https://doi-org.uproxy.library.dc-uoit.ca/10.4018/IJICTE.2016070103>
- Kartal, G. (2010). Does language matter in multimedia learning? Personalization principle revisited. *Journal of Educational Psychology*, 102(3), 615–624.
<https://doi.org/10.1037/a0019345>
- Kearns, L. L. (2011). High-stakes standardized testing and marginalized youth: An examination of the impact on those who fail. *Canadian Journal of Education*, 34(2), 112–130.
https://resolver-scholarsportal-info.uproxy.library.dc-uoit.ca/resolve/03802361/v34i0002/112_hstamytotwf.xml
- Kearns, L. L. (2013). The construction of 'illiterate' and 'literate' youth: the effects of high-stakes standardized literacy testing. *Race Ethnicity and Education*, 19(1), 121–140.
<https://doi.org/10.1080/13613324.2013.843520>
- Khodarahmi, E., & Zarrinabadi, N. (2016). Self-regulation and academic optimism in a sample of Iranian language learners: Variations across achievement group and gender. *Current Psychology*, 35(4), 700–710.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1007/s12144-015-9340-z>

- Kim, Y. H., & Jang, E. E. (2009). Differential functioning of reading subskills on the OSSLT for L1 and ELL students: A multidimensionality model-based DBF/DIF approach. *Language Learning*, 59(4), 825–865. <https://doi.org/10.1111/j.1467-9922.2009.00527.x>
- Kimmons, R. (2017). Open to all? Nationwide evaluation of high-priority web accessibility considerations among higher education websites. *Journal of Computing in Higher Education*, 29(3), 434–450. <https://doi-org.uproxy.library.dc-uoit.ca/10.1007/s12528-017-9151-3>
- Klinger, D. A., & Luce-Kapler, R. (2007). Walking in their shoes: Students' perceptions of large-scale high-stakes testing. *The Canadian Journal of Program Evaluation*, 22(3), 29–52. <https://evaluationcanada.ca/system/files/cjpe-entries/22-3-029.pdf>
- Klinger, D. A., Rogers, W. T., Anderson, J. O., Poth, C., & Calman, R. (2006). Contextual and school factors associated with achievement on a high-stakes examination. *Canadian Journal of Education*, 29(3), 771–797. <https://doi.org/10.2307/20054195>
- Koo, J., Becker, B. J., & Kim, Y. S. (2013). Examining differential item functioning trends for English language learners in a reading test: A meta-analytical approach. *Language Testing*, 31(1), 89–109. <https://doi.org/10.1177/0265532213496097>
- Kruger, J. L., & Steyn, F. (2014). Subtitles and eye tracking: Reading and performance. *Reading Research Quarterly*, 49(1), 105–120. <https://doi-org.uproxy.library.dc-uoit.ca/10.1002/rrq.59>
- Lake, V. E., & Beisly, A. H. (2019). Translation apps: Increasing communication with dual language learners. *Early Childhood Education Journal*, 47(4), 489–496. <https://doi-org.uproxy.library.dc-uoit.ca/10.1007/s10643-019-00935-7>

- Lane, P. (2017, October 19). *How positive language impacts learning*. iAchieve Learning.
<https://iachievelearning.com/2017/10/how-positive-language-impacts-learning/>
- Lederman, D. (2018, November 7). *Online education ascends*. Inside Higher Ed.
<https://www.insidehighered.com/digital-learning/article/2018/11/07/new-data-online-enrollments-grow-and-share-overall-enrollment>
- Levin, B. (2010). The challenge of large-scale literacy improvement. *School Effectiveness and School Improvement*, 21(4), 359–376. <https://doi.org/10.1080/09243453.2010.486589>
- Li, J., Snow, C., Jiang, J., & Edwards, N. (2015). Technology use and self-perceptions of English language skills among urban adolescents. *Computer Assisted Language Learning*, 28(5), 450–478. <https://doi-org.uproxy.library.dc-uoit.ca/10.1080/09588221.2014.881387>
- Li, J., Snow, C., & White, C. (2014). Urban adolescent students and technology: Access, use and interest in learning language and literacy. *Innovation in Language Learning and Teaching*, 9(2), 143–162. <https://doi.org/10.1080/17501229.2014.882929>
- Lusk, D. L., Evans, A. D., Jeffrey, T. R., Palmer, K. R., Wikstrom, C. S., & Doolittle, P. E. (2009). Multimedia learning and individual differences: Mediating the effects of working memory capacity with segmentation. *British Journal of Educational Technology*, 40(4), 636–651. <https://doi-org.uproxy.library.dc-uoit.ca/10.1111/j.1467-8535.2008.00848.x>
- Mayer, R. E. (2017). Using multimedia for e-learning. *Journal of Computer Assisted Learning*, 33(5), 403–423. <https://doi.org/10.1111/jcal.12197>
- Mammarella, N. Fairfield, B., & Di Domenico, A. (2013). When spatial and temporal contiguities help the integration in working memory: “A multimedia learning” approach.

- Learning & Individual Differences*, 24, 139–144.
- <https://doi-org.uproxy.library.dc-uoit.ca/10.1016/j.lindif.2012.12.016>
- Microsoft. (2014). Flipgrid. <https://info.flipgrid.com/>
- Neumeier, P. (2005). A closer look at blended learning — parameters for designing a blended learning environment for language teaching and learning. *ReCALL*, 17(2), 163–178.
- <https://doi.org/10.1017/s0958344005000224>
- Nistor, G. C. & Iacob, A. (2018). The advantages of gamification and game-based learning and their benefits in the development of education. *ELearning & Software for Education*, 1, 308–312. <https://doi-org.uproxy.library.dc-uoit.ca/10.12753/2066-026X-18-042>
- Nucaro, A. (2017, October 2). *Positive words go a long way*. Edutopia.
- <https://www.edutopia.org/article/positive-words-go-long-way>
- Ontario Virtual School. (2019). Ontario Secondary School Literacy Online Course.
- https://www.ontariovirtualschool.ca/courses/olc4o/?gclid=Cj0KCQjwmdzzBRC7ARIsANdqRRkCfyYeEckSO6tMcttsx0HGJ_irXPCP4v_hCbiWx_Hnhlff0dLAXslaAoHnEALw_wcB
- Ozgur, H., Demiralay, T., & Demiralay, I. (2014). Exploration of problematic internet use and loneliness among distance education students. *Turkish Online Journal of Distance Education (TOJDE)*, 15(2), 75–90.
- <https://doi-org.uproxy.library.dc-uoit.ca/10.17718/tojde.43009>
- Paek, S. L., Hoffman, D. L., & Saravanos, A. L. (2016). Spatial contiguity and incidental learning in multimedia environments. *British Journal of Educational Technology*, 48(6), 1390–1401. <https://doi.org/10.1111/bjet.12488>

PennState College of Education. (n.d.). How can I support ELLs in my classroom?

<https://ed.psu.edu/pds/elementary/intern-resources/esl-handbook/supporting-ells>

People for Education. (2020). Tracking Canada's education systems' response to COVID-19.

<https://peopleforeducation.ca/our-work/tracking-canadas-education-systems-response-to-covid-19/>

Rabah, J, Cassidy, R., & Beauchemin, R. (2018). Gamification in education: Real benefits or edutainment? *Proceedings of the European Conference on E-Learning*, 489–496.

<https://doi.org/10.13140/rg.2.2.28673.56162>

Ramachandran, S. D., & Rahim, H. A. (2004). Meaning recall and retention: The impact of the translation method on elementary level learners' vocabulary learning. *RELC Journal*, 35(2), 161–178. <https://doi.org/10.1177/003368820403500205>

Randall, D. L., Harrison, J. B., & West, R. E. (2013). Giving credit where credit is due:

Designing open badges for a technology integration course. *TechTrends*, 57(6), 88–95.

<https://doi.org/10.1007/s11528-013-0706-5>

Raymond, A., Jacob, E., Jacob, D., & Lyons, J. (2016). Peer learning a pedagogical approach to enhance online learning: A qualitative exploration. *Nurse Education Today*, 44, 165–169.

<https://doi.org/10.1016/j.nedt.2016.05.016>

Reichelt, M., Kämmerer, F., Niegemann, H. M., & Zander, S. (2014). Talk to me personally:

Personalization of language style in computer-based learning. *Computers in Human*

Behavior, 35, 199–210. <https://doi.org/10.1016/j.chb.2014.03.005>

- Reid, A. J., Paster, D., & Abramovich, S. (2015). Digital badges in undergraduate composition courses: Effects on intrinsic motivation. *Journal of Computers in Education*, 2(4), 377–398. <https://doi.org/10.1007/s40692-015-0042-1>
- Responsive Classroom. (2012, April 10). Want positive behavior? Use positive language. <https://www.responsiveclassroom.org/want-positive-behavior-use-positive-language/>
- Rutkowski, A.F., & Saunders, C.S. (2010). Growing pains with information overload. *Computer*, 43(6), 95–96. <https://doi-org.uproxy.library.dc-uoit.ca/10.1109/MC.2010.171>
- Sahin, Y. L., Karadag, N., Bozkurt, A., Dogan, E., Kılinc, H., Ugur, S., Gumus, S., Ozturk, A., & Guler, C. (2017). The use of gamification in distance education: A web-based gamified quiz application. *Turkish Online Journal of Qualitative Inquiry*, 8(4), 372–395. <https://doi-org.uproxy.library.dc-uoit.ca/10.17569/tojqi.329742>
- Sapp, W. (2009). Universal design: Online educational media for students with disabilities. *Journal of Visual Impairment & Blindness*, 103(8), 495–500. <https://search-ebshost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=508079684&scope=site>
- Schrader, C., Reichelt, M. & Zander, S. (2018). The effect of the personalization principle on multimedia learning: the role of student individual interests as a predictor. *Educational Technology Research & Development*, 66(6), 1387–1397. <https://doi-org.uproxy.library.dc-uoit.ca/10.1007/s11423-018-9588-8>
- Schroeder, N. L., & Cenkci, A. T. (2020). Do measures of cognitive load explain the spatial split-attention principle in multimedia learning environments? A systematic review.

Journal of Educational Psychology, 112(2), 254–270.

<https://doi.org/10.1037/edu0000372>

Schüler, A., Scheiter, K., & Genuchten, E. (2011). The role of working memory in multimedia instruction: Is working memory working during learning from text and pictures?

Educational Psychology Review, 23(3), 389–411.

<https://doi.org/10.1007/s10648-011-9168-5>

Schweppe, J., & Rummer, R. (2014). Attention, working memory, and long-term memory in multimedia learning: An integrated perspective based on process models of working memory. *Educational Psychology Review*, 26(2), 285–306.

<https://doi.org/10.1007/s10648-013-9242-2>

Selwyn, N. (2007). Curriculum online? Exploring the political and commercial construction of the UK digital learning marketplace. *British Journal of Sociology of Education*, 28(2),

223–240. <https://doi-org.uproxy.library.dc-uoit.ca/10.1080/01425690701192729>

Shawar, B. A. (2015). Evaluating web accessibility of educational websites. *International Journal of Emerging Technologies in Learning*, 10(4), 4–10.

<https://doi-org.uproxy.library.dc-uoit.ca/10.3991/ijet.v10i4.4518>

Shields, R., & Chugh, R. (2016). Digital badges – rewards for learning? *Education and*

Information Technologies, 22(4), 1817–1824. <https://doi.org/10.1007/s10639-016-9521-x>

Subramony, D. P. (2007). Education, technology, and the Asian-American community: Forging a unique identity in the face of unique challenges. *Educational Technology*, 47(4), 24–32.

<https://search-ebshost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=507989463&scope=site>

- Tabbers, H. K., Martens, R. L., & van Merriënboer, J. J. G. (2004). Multimedia instructions and cognitive load theory: Effects of modality and cueing. *British Journal of Educational Psychology*, 74(1), 71–81.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1348/000709904322848824>
- Tarbuton, T. (2018). Leveraging 21st century learning & technology to create caring diverse classroom cultures. *Multicultural Education*, 25(2), 4–6.
<https://search-ebshost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=130011881&scope=site>
- The Association of Registered Graphic Designers. (2015). *Access ability: A practical handbook on accessible web design*. Accessibility Canada.
<https://accessibilitycanada.ca/wp-content/uploads/2018/10/AccessAbility-Handbook-on-Acc.-Web-Design.pdf>
- Topkaraoglu, M., & Nisanci, S. (2018). The role of subtitles in EFL learners' bottom-up processing skills in listening. *International Journal of Language Academy*, 6(3), 347–361. <https://doi-org.uproxy.library.dc-uoit.ca/10.18033/ijla.3970>
- Tsiplakides, I., & Keramida, A. (2010). Promoting positive attitudes in ESL/EFL classes. *The Internet TESL Journal*, 16(1).
<http://iteslj.org/Techniques/Tsiplakides-PositiveAttitudes.html>
- van Roy, R. R., & Zaman, B. (2018). Need-supporting gamification in education: An assessment of motivational effects over time. *Computers & Education*, 127, 283–297.
<https://doi-org.uproxy.library.dc-uoit.ca/10.1016/j.compedu.2018.08.018>

Virtual High School. (2018). OLC4O.

<https://www.virtualhighschool.com/courses/outlines/olc4o.asp>

Wang, Y., & Crooks, S. (2015). Does combining the embodiment and personalization principles of multimedia learning affect learning the culture of a foreign language? *Journal of Educational Multimedia & Hypermedia*, 24(2), 161–177.

<https://search-ebscohost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=102905728&scope=site>

Waring, H. Z. (2008). Using explicit positive assessment in the language classroom: IRF, feedback, and learning opportunities. *The Modern Language Journal*, 92(4), 577–594.

<https://doi-org.uproxy.library.dc-uoit.ca/10.1111/j.1540-4781.2008.00788.x>

Watson, A., & Kehler, M. (2012). Beyond the “boy problem”: Raising questions, growing concerns and literacy reconsidered. *New England Reading Association Journal*, 48(1), 43–55.

<https://search-ebscohost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&d=eue&AN=81281408&scope=site>

Wei, L. (2013). Online learning community with open dialogue interaction: Strategies and application. *Journal of Language Teaching & Research*, 4(3), 618–623.

<https://doi-org.uproxy.library.dc-uoit.ca/10.4304/jltr.4.3.618-623>

Williams, L. (2006). Web-based machine translation as a tool for promoting electronic literacy and language awareness. *Foreign Language Annals*, 39(4), 565–578.

<https://doi-org.uproxy.library.dc-uoit.ca/10.1111/j.1944-9720.2006.tb02276.x>

- Xu, M. L., & Leung, S. O. (2018). Effects of varying numbers of Likert scale points on factor structure of the Rosenberg self-esteem scale. *Asian Journal of Social Psychology*, 21(3), 119–128. <https://doi.org/10.1111/ajsp.12214>
- Yao, S. (2017). Application of computer-aided translation in English teaching. *International Journal of Emerging Technologies in Learning*, 12(8), 105–117. <https://doi-org.uproxy.library.dc-uoit.ca/10.3991/ijet.v12i08.7145>
- Yuan, J., & Kim, C. (2014). Guidelines for facilitating the development of learning communities in online courses. *Journal of Computer Assisted Learning*, 30(3), 220–232. <https://doi.org/10.1111/jcal.12042>
- Yun, R. J., Krystal, J. H., & Mathalon, D. H. (2010). Working memory overload: Fronto-limbic interactions and effects on subsequent working memory function. *Brain Imaging and Behavior*, 4(1), 96–108. <https://doi.org/10.1007/s11682-010-9089-9>
- Zheng, Y., Klinger, D. A., Cheng, L., Fox, J., & Doe, C. (2011). Test-takers' background, literacy activities, and views of the Ontario Secondary School Literacy Test. *Alberta Journal of Educational Research*, 57(2), 115–136. <https://search-ebshost-com.uproxy.library.dc-uoit.ca/login.aspx?direct=true&db=eue&AN=67256893&scope=site>